# REPAIR PARTS CATALOG FOR SUNNEN®
# HORIZONTAL HONES & ACCESSORIES

**MODEL:**
**CH100,**
**CH20/CH40, CH455, CH525, & CH850**

**THIS CATALOG COVERS THE ABOVE MODEL BEGINNING WITH SERIAL NO. 3246.**

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**SUNNEN® PRODUCTS COMPANY**
**7910 MANCHESTER AVENUE • ST. LOUIS, MO 63143, U.S.A. • PHONE: 314-781-2100**

**X-CH-1103H**

Like any machinery, this equipment may be dangerous if used improperly. Be sure to read and follow instructions for operation of equipment.

## INTRODUCTION

Illustrations show all major components in exploded detail. Item numbers on each illustration are keyed to the corresponding parts list, providing a descriptive identification of each part.

The parts lists include assemblies as well as detail parts. An item listed without a part number can be obtained as a component of the complete assembly of which it is a part.

Standard hardware items are listed with complete descriptions, such as Item 29 below. **These may be purchased at your local hardware store,** but it is important to replace an item with one having the same dimensions as the original. In some places brand names and part numbers are shown. These may change depending upon availability.

***Sunnen Products Company reserves the right to make changes, without notice, to materials, specifications, colors, designs and accessories included with units.***

## HOW TO ORDER

When ordering replacement parts be sure to include the following information to ensure prompt shipment of correct parts:

**1.** The part number and description of each part desired, obtained from this parts catalog.

**2.** The quantity of each part desired.

**3.** The voltage, frequency and phase, when ordering electrical parts.

**4.** The model and serial number of the machine, obtained from the name plate, where there is any question concerning a part.

## HOW TO USE THIS PARTS LIST

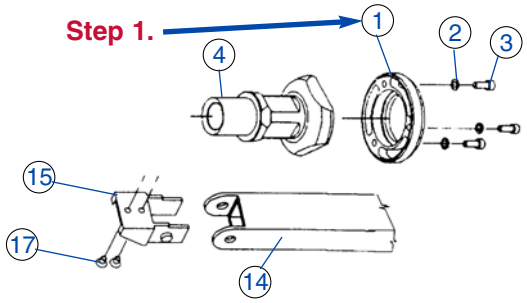
**Step 1. –** Locate desired part on illustration. Note item number.

**Step 2. –** Locate item number in the parts list.

**Step 3. –** If the item has a part number listed, order by part number and the description. A part number in light face type indicates that it is a component of the last preceding part number in bold face type.

**Step 4. –** If no number is listed, order the part number of the unit of which the desired part is a component. **ORDER ONLY BY PART NUMBER AND DESCRIPTION – NOT** by item number.

NOTE: In this manual, parts may be followed by "(For CE Machines)" or "(For Non-CE Machines)" to denote domestic machines from exported machines. The CE version is constructed to meet the requirements of the European market, and is available to any customer.




| ITEM NO. | ORDER BY PART NUMBER | QTY. | DESCRIPTION |
|---|---|---|---|
| **1** | **MVH-4499A** | **1** | **....Spindle Cap** *includes* |
| 2 | PHSM-405 | 3 | .....Screw (M6 x 1 x 16 SHCS) |
| 3 | PHW-354 | 3 | .....Washer (M6) |
| **4** | **MVH-4422** | **1** | **....Inner Spindle Nose** |
| **14** | **PEM-870A** | **1** | **....Cable Carrier** *includes* |
| 15 | PEM-871 | 1 | .....Cable Carrier Bracket |
| 16 | PEM-872 | 1 | .....Cable Carrier Bracket |
| **17** | **PHSM-600** | **1** | **....Screw** (M3 x 0,5 x 5mm FHCS) |

Step 2. → Item 1
Step 3. → Item 2
Step 4. → Items 15 and 16

## GENERAL INFORMATION

The Sunnen® equipment has been designed and engineered for a wide variety of parts within the capacity and limitation of the equipment. With proper care and maintenance this equipment will give years of service.

READ THE FOLLOWING INSTRUCTIONS CAREFULLY AND THOROUGHLY BEFORE UNPACKING, INSPECTING, OR INSTALLING THIS EQUIPMENT.

IMPORTANT: Read any supplemental instructions BEFORE installing this equipment. These supplemental instructions give you important information to assist you with the planning and installation of your Sunnen equipment.

Sunnen Technical Service Department is available to provide telephone assistance for installation, programming, & troubleshooting of your Sunnen equipment. All support is available during normal business hours, 8:00 AM to 4:30 PM Central Time. Emergency breakdown support is available on a 24 hour / 7 day basis.

Review all literature provided with your Sunnen equipment. This literature provides valuable information for proper installation, operation, and maintenance of your equipment. Troubleshooting information can also be found within the Instructions. If you cannot find what you need, call for technical support.

Where applicable, programming information for your Sunnen equipment is also included. Most answers can be found in the literature packaged with your equipment.

**Help us help you. When ordering parts, requesting information, or technical assistance about your equipment, please have the following information available:**

- Have ALL MANUALS on hand. The Customer Services Representative or Technician will refer to it.
- Have Model Number and Serial Number printed on your equipment Specification Nameplate.
- Where Applicable: Have Drive model and all nameplate data. Motor type, brand, and all nameplate data.

**For Troubleshooting, additional information may be required:**

- Power distribution information (type - delta, wye, power factor correction; other major switching devices used, voltage fluctuations)
- Installation Wiring (separation of power & control wire; wire type/class used, distance between drive and motor, grounding).
- Use of any optional devices/equipment between the Drive & motor (output chokes, etc.).

**For fast service on your orders call:**

Sunnen Automotive Customer Service toll free at: 1-800-772-2878

Sunnen Industrial Customer Service toll free at: 1-800-325-3670

Customers outside the USA, contact your local authorized Sunnen Distributor.

Additional information available at: http://www.sunnen.com or e-mail: sunnen@sunnen.com

NOTE: Sunnen reserves the right to change or revise specifications and product design in connection with any feature of our products contained herein. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment, supplies or accessories previously sold. Information contained herein is considered to be accurate based on available information at the time of printing. Should any discrepancy of information arise, Sunnen recommends that user verify the discrepancy with Sunnen before proceeding.

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## ESD PREVENTION REVIEW

Let's review the basics of a sound static control system and its effective implementation. First, in the three step plan:

1. Always ground yourself when handling sensitive components or assemblies.
2. Always use a conductive or shielded container during storage or transportation. These materials create a Faraday cage which will isolate the contents from static charges.
3. Open ESD safe containers only at a static safe work station.

At the static safe work station, follow these procedures before beginning any work:

A. Put on your wrist strap or foot grounding devices.

B. Check all grounding cords to make sure they are properly connected to ground, ensuring the effective dissipation of static charges.

C. Make sure that your work surface is clean and clear of unnecessary materials, particularly common plastics.

D. Anti-static bubble wrap has been included for use at the machine when an ESD safe workstation is not available.

You are now properly grounded and ready to begin work. Following these few simple rules and using a little common sense will go a long way toward helping you and your company in the battle against the hazards of static electricity. When you are working with ESD sensitive devices, make sure you:

**GROUND**

**ISOLATE**

**NEUTRALIZE**

## SUNNEN® LIMITED PRODUCT WARRANTY

Sunnen® Products Company and its subsidiaries (SPC) warrant that all new SPC honing machines, gaging equipment, tooling, and related equipment will be free of defects in material and/or workmanship for a period of one year from the date of original shipment from SPC.

Upon prompt notification of a defect during the one-year period, SPC will repair, replace, or refund the purchase price, with respect to parts that prove to be defective (as defined above). Any equipment or tooling which is found to be defective from improper use will be returned at the customer's cost or repaired (if possible) at customer's request. Customer shall be charged current rates for all such repair.

Prior to returning any SPC product, an authorization (RMA#) and shipping instructions must be obtained from the Customer Service Department or items sent to SPC will be returned to the customer.

**Warranty Limitations and Exclusions** This Warranty does not apply to the following:

- Normal maintenance items subject to wear and tear: (belts, fuses, filters, etc).
- Damages resulting from but not limited to:
  - › Shipment to the customer (for items delivered to customer or customer's agent F.O.B., Shipping Point)
  - › Incorrect installation including improper lifting, dropping and/or placement
  - › Incorrect electric power (beyond +/- 10% of rated voltage) including intermittent or random voltage spikes or drops
  - › Incorrect air supply volume and/or pressure and/or contaminated air supply
  - › Electromagnetic or radio frequency interference from surrounding equipment (EMI, RFI)
  - › Storm, lightning, flood or fire damage
  - › Failure to perform regular maintenance as outlined in SPC manuals
  - › Improper machine setup or operation causing a crash to occur
  - › Misapplication of the equipment
  - › Use of non-SPC machines, tooling, abrasive, fixturing, coolant, repair parts, or filtration
  - › Incorrect software installation and/or misuse
  - › Non-authorized customer installed electronics and/or software
  - › Customer modifications to SPC software

**THE LIMITED WARRANTY DESCRIBED HEREIN IS EXPRESSLY IN LIEU OF ALL ANY OTHER WARRANTIES. SPC MAKES NO REPRESENTATION OR WARRANTY OF ANY OTHER KIND, EXPRESS OR IMPLIED, WHETHER AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER MATTER. SPC IS NOT RESPONSIBLE FOR THE IMPROPER USE OF ANY OF ITS PRODUCTS. SPC SHALL NOT BE LIABLE FOR DIRECT, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES INCLUDING BUT NOT LIMITED TO: LOSS OF USE, REVENUE, OR PROFIT. SPC ASSUMES NO LIABILITY FOR PURCHASED ITEMS PRODUCED BY OTHER MANUFACTURERS WHO EXTEND SEPARATE WARRANTIES. REGARDLESS OF ANY RIGHTS AFFORDED BY LAW TO BUYER, SPC's LIABILITY, IF ANY, FOR ANY AND ALL CLAIMS FOR LOSS OR DAMAGES WITH RESPECT TO THE PRODUCTS, AND BUYER'S SOLE AND EXCLUSIVE REMEDY THEREFORE, SHALL IN ALL EVENTS BE LIMITED IN AMOUNT TO THE PURCHASE PRICE OF THAT PORTION OF THE PRODUCTS WITH RESPECT TO WHICH A VALID CLAIM IS MADE.**

### Shipping Damages

Except in the case of F.O.B., Buyer's destination shipments, SPC will not be liable for any settlement claims for obvious and/or concealed shipping damages. The customer bears the responsibility to unpack all shipments immediately and inspect for damage. When obvious and/or concealed damage is found, the customer must immediately notify the carrier's agent to make an inspection and file a claim. The customer should retain the shipping container and packing material.

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Any alteration or reverse engineering of the software is expressly forbidden and is in violation of this agreement.

SPC reserves the right to update the software covered by this agreement at any time without prior notice and any such updates are covered by this agreement.

# SAFETY INSTRUCTIONS

## READ FIRST

This machine, like any equipment, may be dangerous if used improperly. Please read all warnings and instructions before attempting to use this machine.

Always disconnect power at main enclosure before servicing machine.[1]

Always wear eye protection when operating this machine.

NEVER open or remove any machine cover or protective guard with power "ON." Always disconnect power at main enclosure before servicing this equipment.[1]

DO NOT attempt any repair or maintenance procedure beyond those described in this book. Contact your Sunnen® Field Service Engineer or Technical Services Representative for repairs not covered in these instructions.

Due to the wide variety of machine configurations, all possibilities cannot be described in these instructions. Instructions for safe use and maintenance of optional equipment ordered through Sunnen, will be provided through separate documentation and/or training provided by your Sunnen Field Service Engineer or Technical Services Representative.

DO NOT attempt to defeat any safety device on this machine or on any of the optional equipment.

If specially built automation components are added to this system, be sure that safety is not compromised. If necessary, obtain special enlarged work area safety system from Sunnen Products Co.

CE Indicates CE version ONLY.

[1] DO NOT touch electrical components until main input power has been turned off and *CHARGE* lamps are extinguished. WARNING: The capacitors are still charged and can be quite dangerous.

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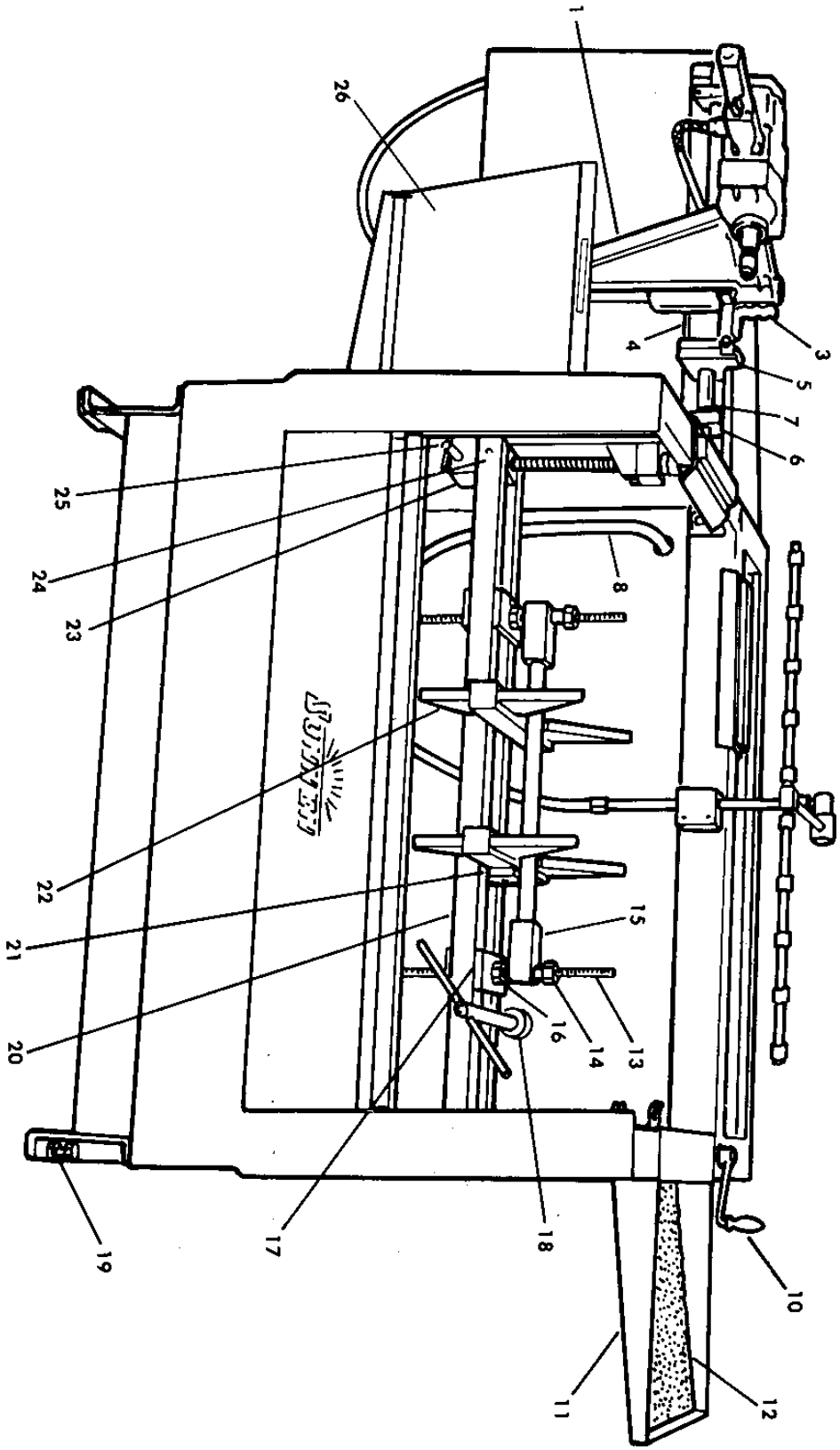


FIGURE 1-A – CH100 HORIZONTAL HONE (1 OF 2)

PARTS LIST COVERING FIGURE "1-A" (1 of 2)

| ITEM NO. | ORDER BY PART NUMBER | QTY. | DESCRIPTION |
|---|---|---|---|
| 1 | **CH157A** | 1 | ....**Drill Support** *with* |
| N/S | - - - | 1 | ......Shaft |
| N/S | - - - | 1 | ......Taper Pin |
| 1 | **CH182A** | 1 | ....**Stop Collar** *with* |
| N/S | - - - | 1 | ......Set Screw (1/4-20x3/8 Soc. Cup Pt.) |
| N/S | - - - | 1 | ......Insert |
| 3 | **CH160A** | 1 | ....**Lock Arm Assembly** *with* |
| N/S | CH173A | 1 | ......Plunger |
| 4 | **CH140A** | 1 | ....**Carriage Assembly** |
| 5 | **CH154A** | 1 | ....**Lock Plate** *with* |
| N/S | - - - | 2 | ......Screws (3/8-16x2 Hex Hd. Cap) |
| N/S | - - - | 2 | ......Lock Washers |
| N/S | - - - | 2 | ......Nuts (3/8-16 Hex) |
| 6 | **CH190A** | 1 | ....**Stop Plate Assembly, Right** *with* |
| 7 | CH187A | 1 | ......Bumper Set (Pkg. of 2) *with* |
| N/S | - - - | 1 | ........Screw (6-32x7/8 But. Hd. Cap) |
| 8 | **CH352A** | 1 | ....**Hose** |
| N/S | **HS-205A** | 1 | ....**Pump** (60 Hz) |
| N/S | **HS-210A** | 1 | ....**Pump** (220 V, 50 Hz / 230 V, 60 Hz) |
| 10 | **CHV-199A** | 1 | ....**Elevating Handle** |
| 11 | **CH568A** | 1 | ....**Pan** |
| 12 | **CH564A** | 1 | ....**Foam Pad** |
| 13 | **CH494A** | 2 | ....**Screw** (Pkg. of 1) |
| 14 | **CH497A** | 2 | ....**Clamp Nut** (Pkg. of 1) |
| 15 | **CH585A** | 1 | ....**Clamp Bar Set** *with* |
| N/S | - - - | 1 | ......Outside Clamp Bar |
| 16 | **CH496A** | 2 | ....**Jam Nut** (Pkg. of 1) |
| 17 | **CH490A** | 2 | ....**Clamp Assembly** (Pkg. of 1) |
| 18 | **CH636A** | 1 | ....**Wrench** |
| 19 | **PHS523A** | 1 | ....**Leveling Screw** (3/4-16x2-1/4 Hex Hd. Cap) *with* |
| N/S | PHN109 | 1 | ......Nut (3/4-16 Hex Jam) |
| 20 | **CH498A** | 2 | ....**Cross Bar** (Pkg. of 1) *with* |
| N/S | PHS528 | 4 | ......Screws (3/8-16x2-1/2 Hex Hd. Cap) |
| N/S | LBN407 | 4 | ......Washers (7/8 O.D. x 3/8 I.D. x .065 Thick) |
| 21 | **CH480A** | 2 | ....**Nest Pivot Assembly** (Pkg of 1) *with* |
| N/S | PHS549 | 2 | ......Screws (1/2-13x1-1/2 Hex Hd. Cap) |
| N/S | KN370 | 2 | ......Washers (7/8 O.D. x 33/64 I.D. x .065 Thick) |
| 22 | **CH475A** | 2 | ....**Cradle Nest** (Pkg. of 1) |
| 23 | **CH465A** | 1 | ....**Elevating Nut Assembly** |
| 24 | **CH469A** | 1 | ....**Clamp Plate** |
| 25 | **CH470A** | 1 | ....**Tee Handle Assembly** *with* |
| N/S | KN538 | 1 | ......Washer (1" O.D. x 17/32 I.D. x 1/8 Thick) |
| N/S | **LBN-462A** | 1 | ....**Mandrel Wrench** (1/4 Hex) |
| 26 | **CH550A** | 1 | ....**Splash Guard** |

*N/S indicates Not Shown*

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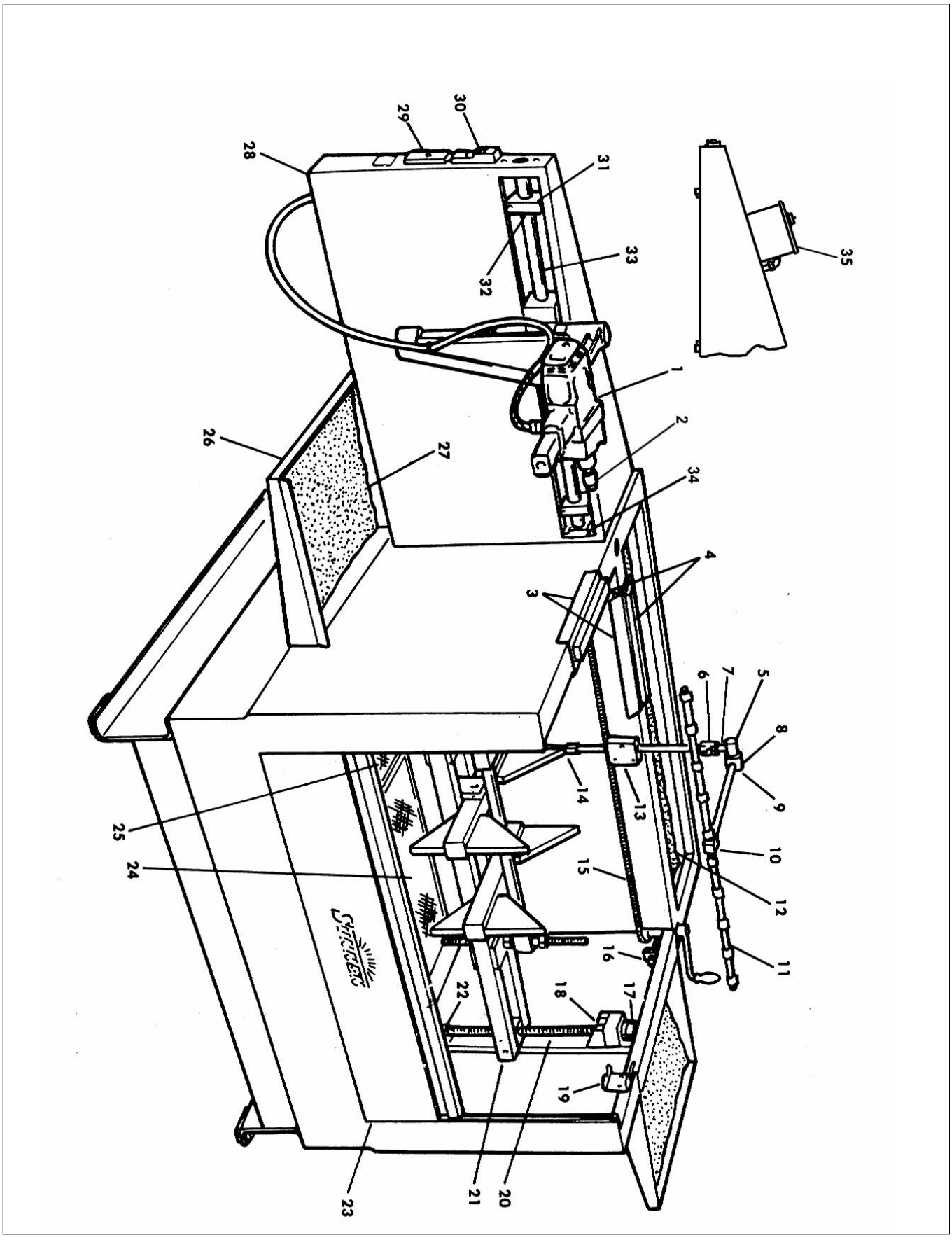



**FIGURE 1-A – CH100 HORIZONTAL HONE (2 OF 2)**

PARTS LIST COVERING FIGURE "1-A" (2 of 2)

| ITEM NO. | ORDER BY PART NUMBER | QTY. | DESCRIPTION |
|---|---|---|---|
| 1 | **CH705A** | 1 | ....**Drill Assembly** (115 V, 60 Hz) |
| 1 | **CH805A** | 1 | ....**Drill Assembly** (220 V, 50 Hz / 230 V, 60 Hz) |
| N/S | **CH714A** | 1 | ....**Armature** (For CH705A) |
| N/S | **CH814A** | 1 | ....**Armature** (For CH805A) |
| N/S | **CH715A** | 1 | ....**Field** (For CH705A) |
| N/S | **CH815A** | 1 | ....**Field** (For CH805A) |
| N/S | **CH726A** | 2 | ....**Brush Set** |
| N/S | **CH760A** | 1 | ....**Non-Reversing Switch** |
| 2 | **CH85A** | 1 | ....**Quick Coupler Assembly** |
| 3 | **CH575A** | 2 | ....**Protective Cover Assembly** (Pkg. of 1) *with* |
| 4 | CH577A | 2 | ......Wood Block (Pkg of 1) *with* |
| N/S | - - - | 3 | ........Screws (8 x 5/8 Flat Hd. Self Tapping) |
| - - | **CH505A** | 1 | ....**Oilspout & Valve Assembly** *Includes* |
| 5 | CH540A | 1 | ......Valve Body Assembly *Includes* |
| N/S | POR105A | 2 | ........"O" Rings (E.F. Houghton #ARP-568-218) (Pkg. of 2) |
| 6 | PPP483A | 1 | ........Mini Ball Valve *with* |
| 7 | PPP147A | 1 | ..........Nipple |
| 8 | CH520A | 1 | ........Shell Assembly |
| 9 | PHR324A | 1 | ........Retaining Ring (Truarc #5100-150PP) |
| 10 | CH510A | 1 | ......Oilspout Assembly *Includes* |
| 11 | CH514A | 10 | ........Spring Clips (Pkg. of 2) |
| 12 | **CH599A** | 1 | ....**Foam Pad** |
| 13 | **CH541A** | 1 | ....**Clamp Plate** *with* |
| N/S | PHS559 | 3 | ......Screws (5/16-18 x 1-3/4 Soc. Hd. Cap) |
| N/S | CH542 | 1 | ......Spacer |
| 14 | **PPP132A** | 1 | ....**Adapter** |
| 15 | **CH462A** | 1 | ....**Chain** *includes* (Connecting Pin & Cotter Pin) |
| N/S | **CH458A** | 2 | ....**Chain** *includes* (Connecting Pin & Cotter Pin) (Pkg. of 1) |
| 16 | **CH464A** | 1 | ....**Idler Adjustment Screw** (Pkg. of 1) *with* |
| N/S | KN386 | 2 | ......Nuts (1/2 x 13 Hex) |
| 17 | **PBR42A** | 2 | ....**Thrust Bearing** (Pkg. of 1) |
| 18 | **CH435A** | 2 | ....**Bearing Support Block** (Pkg. of 1) *with* |
| N/S | PRB41A | 2 | ......Bushing (Torrington #10SBB16) (Pkg. of 1) |
| N/S | PHS654A | 4 | ......Screw |
| N/S | **CH440A** | 2 | ....**Idler Arm Assembly** (Pkg. of 1) |
| 19 | **CK3006A** | 1 | ....**Gage Hanger** *with* |
| N/S | CK3007 | 1 | ......Clamp |
| N/S | MAN1028 | 2 | ......Screws (1/4-20 x 3/4 Hex Hd. Cap) |
| 20 | **CH425A** | 2 | ....**Elevating Screw** (Pkg. of 1) |
| N/S | **CH429A** | 1 | ....**Sprocket** *with* |
| N/S | - - - | 2 | ......Keys (Woodruff #61) |
| N/S | - - - | 2 | ......Set Screws (1/4-20 x 1/4 Soc. Plain Cup Pt.) |
| 21 | **CH468A** | 1 | ....**Elevating Nut** |
| 22 | **CK1128A** | 1 | ....**Stop Collar** *with* |
| N/S | PHS104 | 1 | ......Set Screw (3/8-16 x 1/2 Soc. Half Dog Pt.) |
| 23 | **CV6023** | 1 | ....**Door-Lower** |
| N/S | **CV6022** | 1 | ....**Door-Center** |
| N/S | **CV6040** | 1 | ....**Door-Upper** |
| 24 | **CK1010A** | 1 | ....**Non-Splash Screen** |

*N/S indicates Not Shown*

(Parts continued on next page)

PARTS LIST COVERING FIGURE "1-A" (cont'd)

| ITEM NO. | ORDER BY PART NUMBER | QTY. | DESCRIPTION |
|---|---|---|---|
| 25 | **CH595A** | 1 | ....**Non-Splash Screen** *includes* Support |
| 26 | **CH560A** | 1 | ....**Drip Tray Assembly** *with* |
| N/S | PHS-653 | 2 | ......Screws (1/4-20 x 3/4 But. Hd. Cap) |
| N/S | LBN431 | 2 | ......Nuts (1/4-20 Hex) |
| N/S | PHW118 | 2 | ......Washers (1/4 Lock) |
| 27 | CH564A | 1 | ......Foam Pad |
| 28 | **CH216A** | 1 | ....**Mounting Angle Cover** *with* |
| N/S | - - - | 4 | ......Screws (10-32 x 1/4 But. Hd. Cap) |
| N/S | **CH146A** | 1 | ....**Torque Arm** |
| N/S | **CH150A** | 1 | ....**Tire Assembly** |
| 29 | **CH208A** | 1 | ....**Cover Plate** *with* |
| N/S | PES136A | 1 | ......Pilot Light |
| N/S | PHS666 | 2 | ......Screw |
| 30 | **PES214A** | 1 | ....**Motor Starting Switch** |
| 31 | **CH185A** | 1 | ....**Stop Plate Assembly - Left** *with* |
| 32 | CH187A | 1 | ......Bumper Set (Pkg. of 2) *with* |
| N/S | - - - | 1 | ........Screw (6-31 x 7/8 But. Hd. Cap) |
| 33 | **CH194A** | 1 | ....**Shaft** |
| 34 | **CH-129** | **2** | ....**Shaft Support** |
| N/S | **PEF141** | 1 | ....**Fuse** (220 V, 50 Hz / 230 V, 60 Hz) |
| N/S | **PEF135** | 1 | ....**Fuse** (115 V, 60 Hz) |
| N/S | **PEF175** | 1 | ....**Fuse** (115 V, 60 Hz) |
| 35 | **CH-850A** | **1** | ....**Switch Box Assembly** (220V, 50Hz) *(see Fig. 4-A)* |
| 35 | **CH-850K** | **1** | ....**Switch Box Assembly** (115V, 60Hz) *(see Fig. 4-A)* |

*N/S indicates Not Shown*

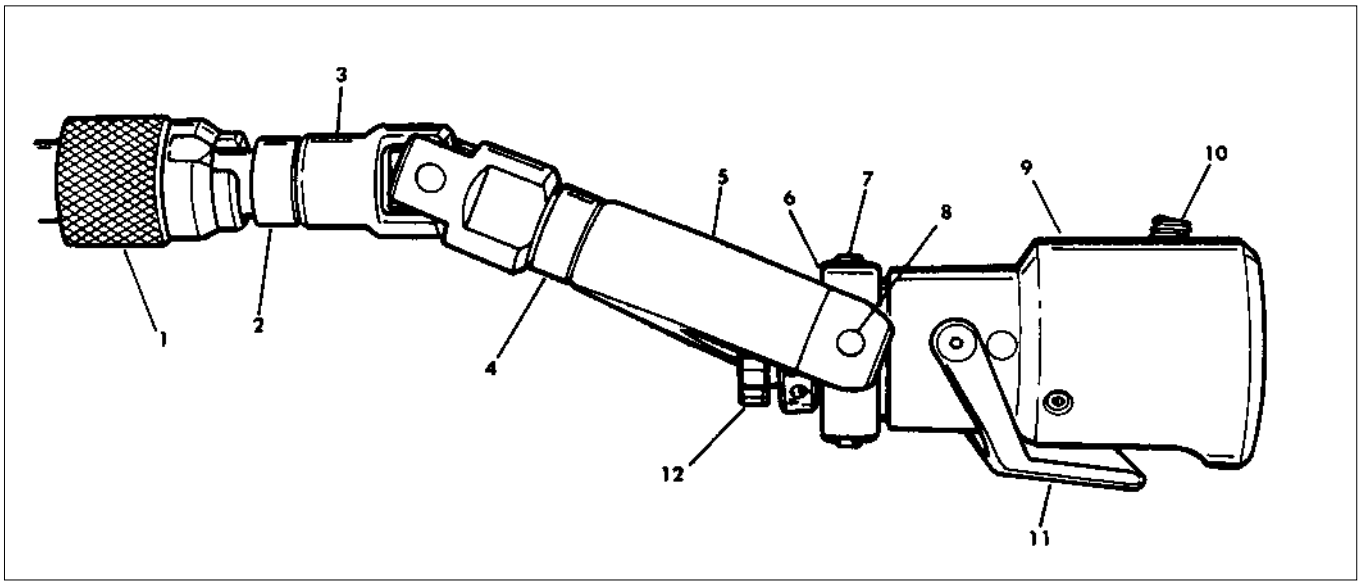



**FIGURE 1-B – HONE DRIVER**

PARTS LIST COVERING FIGURE "1-B"

| ITEM NO. | ORDER BY PART NUMBER | QTY. | DESCRIPTION |
|---|---|---|---|
| 1 | **CH85A** | Ref. | ....**Quick Coupler Assembly** |
| - - | **CH75A** | Ref. | ....**Hone Driver Complete** *consists of* |
| N/S | CH88A | 1 | .....Spacer |
| 2 | AN97 | 1 | .....Yoke Adapter |
| 3 | AN675A | 1 | .....Universal Joint |
| 4 | AN640A | 1 | .....Extension Coupler |
| 5 | AN619A | 1 | .....Universal Yoke |
| 6 | CH77A | 1 | .....Universal Ring *with* |
| 7 | GGN101A | 2 | .....Universal Screws (Must be assembled with Loctite) |
| 8 | CH78A | 2 | .....Screws |
| N/S | CH79A | 2 | .....Plugs (Fits under GGN-101A, item 7, applies tension to |
| - - | - - - | - | Feed Dial - Set Screws must be assembled with Loctite) |
| - - | CH80A | Ref. | .....Body Tension & Feed Assembly *consists of* |
| 9 | GGN130A | 1 | .....Body & Tension Dial Assembly |
| N/S | GGN111A | 1 | .....Feed Screw |
| N/S | - - - | 1 | .....Washer (3/4 O.D. x 3/8 I.D. x 3/64 Nylon) |
| 10 | LBN346A | 1 | .....Set Screw (1/2-13 x 7/16 Soc. Flat Pt.) |
| N/S | CH76A | 1 | .....Mandrel Drive Plate |
| N/S | - - - | 1 | .....Set Screw (6-32 x 5/16 Soc. Flat Pt. with Nylok) |
| N/S | - - - | 3 | .....Set Screws (1/4-20 x 7/16 Soc. Full Dog Pt.) |
| N/S | GGN118C | 1 | .....Feed Link |
| 11 | GGN112A | 1 | .....Handle |
| N/S | - - - | 2 | .....Screws (10-32 x 1/2 Flat Hd. Soc. Cap) |
| N/S | GGN101A | 2 | .....Universal Screws (Also supplied with item 6) |
| N/S | CH79A | 2 | .....Plugs (Also supplied with item 6) |
| 12 | GGN106A | 1 | .....Feed Knob |
| N/S | - - - | 1 | .....Set Screw (10-32 x 5/16 Soc. Cap Pt.) |
| N/S | **LBN462A** | 1 | ....**Mandrel Wrench** (1/4 Hex) |
| N/S | **AN840** | 1 | ....**Heavy Duty Extension** (6") |

*N/S indicates Not Shown*

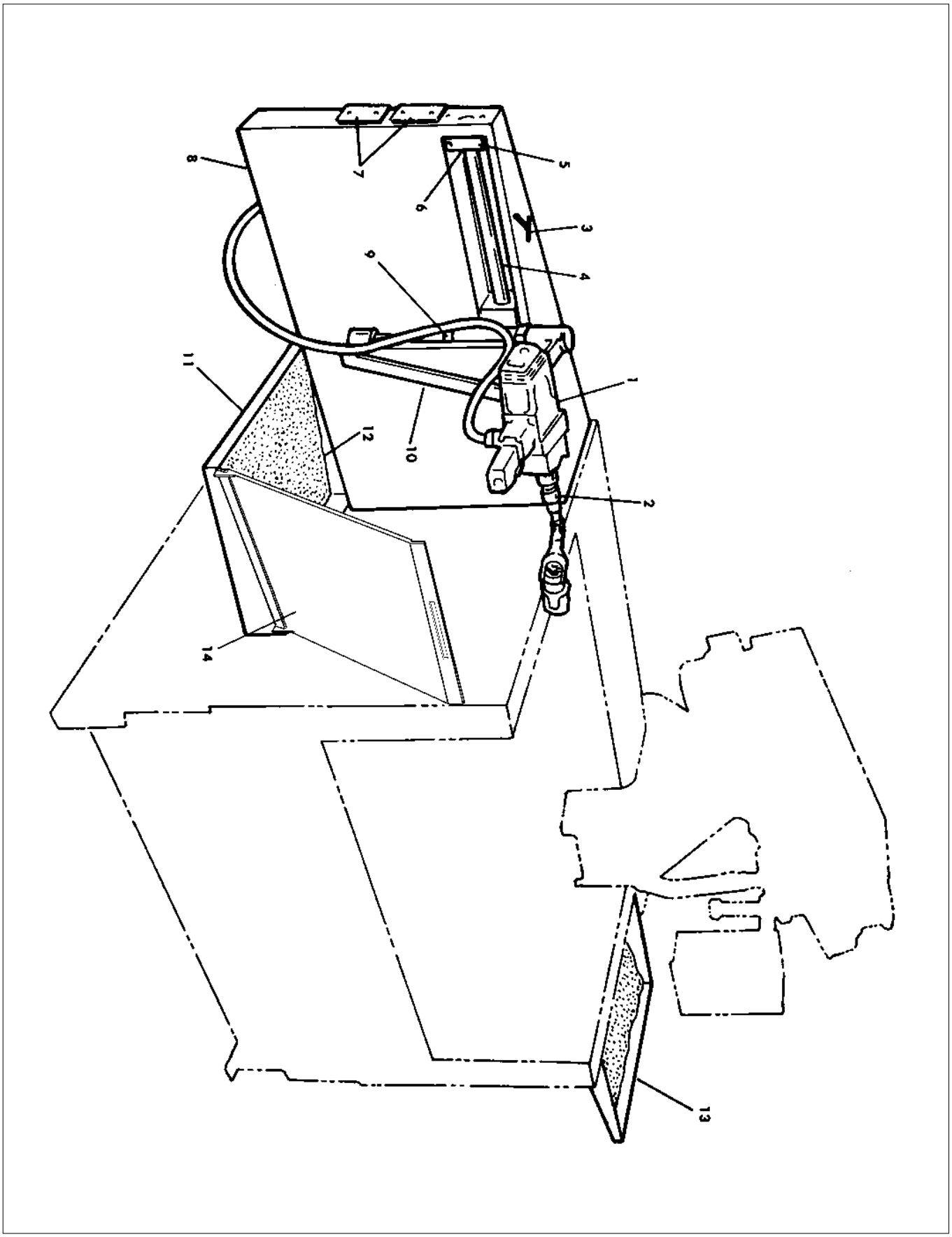



FIGURE 2-A – CH20A/K & CH40A/K HORIZONTAL HONE DRIVER

PARTS LIST COVERING FIGURE "2-A"

| ITEM NO. | **ORDER BY PART NUMBER** | QTY. | DESCRIPTION |
|---|---|---|---|
| 1 | **CH705A** | 1 | ....**Drill Assembly** (115 V, 60 Hz) |
| N/S | CH714A | 1 | .....Armature (For CH705A) |
| N/S | CH715A | 1 | .....Field (For CH705A) |
| N/S | CH726A | 2 | .....Brush Set |
| N/S | CH760A | 1 | .....Non-Reversing Switch |
| 1 | **CH805A** | 1 | .....**Drill Assembly** (220 V, 50 Hz) |
| N/S | CH814A | 1 | .....Armature (For CH805A) |
| N/S | CH815A | 1 | .....Field (For CH805A) |
| N/S | CH726A | 2 | .....Brush Set |
| N/S | CH760A | 1 | .....Non-Reversing Switch |
| 2 | **CH85A** | 1 | ....**Hone Driver** (see Figure "B") |
| 3 | **LBN462A** | 1 | ....**Mandrel Wrench** (1/4 Hex) |
| - - | - - - | Ref. | ....**Horizontal Hone Driver** *includes* |
| 4 | CH194A | 1 | .....Shaft |
| 5 | CH185A | 1 | .....Stop Plate Assembly - Left *with* |
| 6 | CH187A | 1 | .....Bumper Set (Pkg. of 2) *with* Screw (6-32 x 7/8 But. Hd. Cap) |
| N/S | CH190A | 1 | .....Stop Plate Assembly - Right |
| 7 | PEM385A | 2 | .....Cover Plate (For 60 Hz Machine) (Pkg. of 1) |
| 7 | CH193A | 2 | .....Cover Plate (For 50 Hz Machine) (Pkg. of 1) |
| 8 | CH216A* | 1 | .....Mounting Angle Cover *with* Screws |
| 9 | CH182A | 1 | .....Stop Collar *with* Set Screw & Insert |
| 10 | CH157A | 1 | .....Drill Support *with* Shaft & Taper Pin |
| 11 | CH560A* | 1 | .....Drip Tray Assembly *with* Attaching Hardware & |
| 12 | CH564A | 1 | .....Tray Pad |
| 13 | CH568A* | 1 | .....Pan *with item 12* |
| 14 | **CH550A** | 1 | ....**Splash Guard, Portable** |

*N/S indicates Not Shown*

*NOTE: CH525 & CH850 must be ordered separately (not included with CH-20 or CH-40 Kits).*

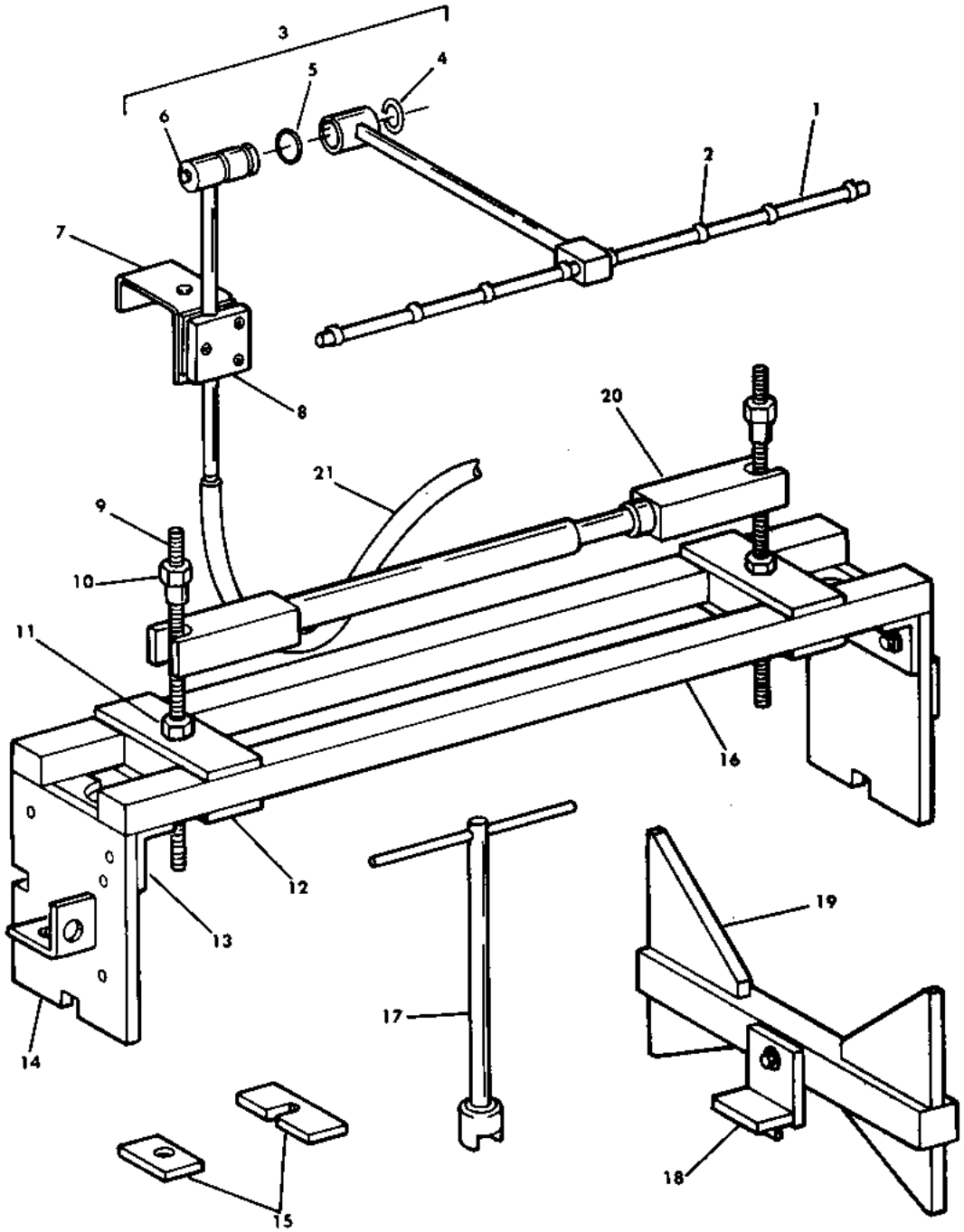



FIGURE 3-A – CH455 CRADLE & CH525 OIL CONTROL

PARTS LIST COVERING FIGURE "3-A"

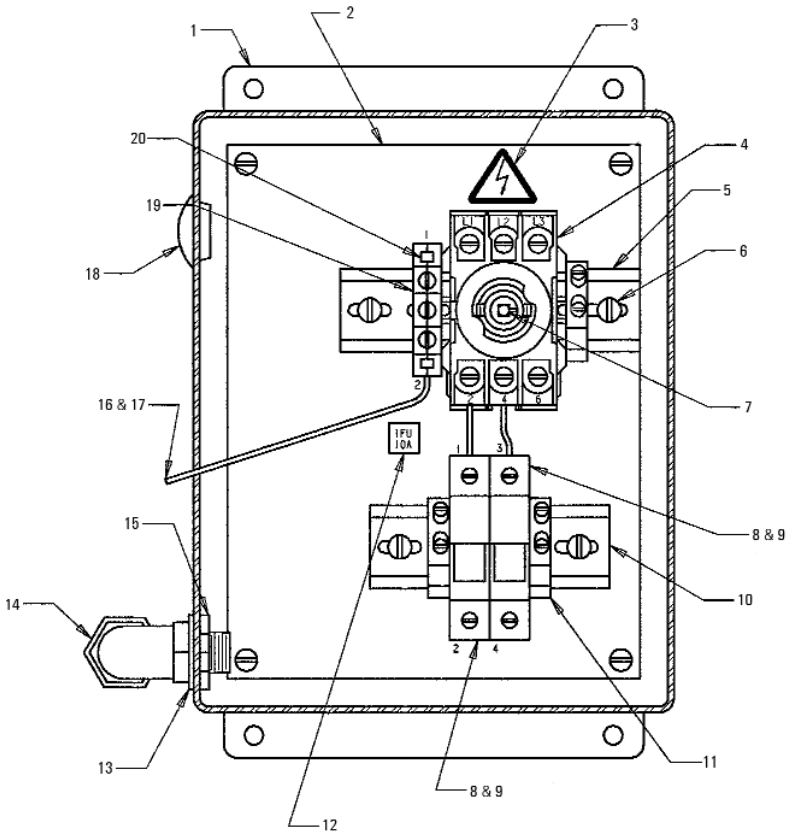
| ITEM NO. | ORDER BY PART NUMBER | QTY. | DESCRIPTION |
|---|---|---|---|
| | **CH525** | Ref. | ....**Oil Control** *consists of* |
| 1 | CH535A | 1 | .....Oilspout Assembly *includes* |
| 2 | CH514A | 8 | .....Spring Clip (Pkg. of 2) |
| 3 | CH530A | 1 | .....Valve Body Assembly *includes* |
| 4 | PHR-324A | 1 | .....Retaining Ring (Truarc #5100-150-PP) |
| 5 | POR-105A | 2 | ....."O" Ring (E.F. Houghton #ARP-568-218) |
| 6 | CH520A | 1 | .....Shell Assembly |
| 7 | CH515A | 1 | .....Oiler Bracket Assembly |
| 8 | CH541C | 1 | .....Clamp Plate *with* |
| N/S | CH542 | 1 | .....Spacer |
| N/S | PHS630 | 3 | .....Screws (5/16-18 x 1-1/4 Soc. Hd. Cap) |
| 21 | CK1309C | 1 | .....Hose |
| N/S | CK1313 | 1 | .....Hose Clamp |
| N/S | PHN125 | 1 | .....Locknut |
| - - | **CH455** | Ref. | .....**Cradle** *consists of* |
| 9 | CH494A | 2 | .....Screw (Pkg. of 1) |
| 10 | CH497A | 2 | .....Clamp Nut (Pkg. of 1) |
| 11 | CH496A | 2 | .....Jam Nut (Pkg. of 1) |
| 12 | CH490A | 2 | .....Clamp Assembly (Pkg. of 1) |
| 13 | CH501A | 2 | .....Cross Angle (Pkg. of 1) *with* |
| N/S | KN422 | 4 | .....Screws (3/8-16 x 1" Hex Hd. Cap) |
| N/S | - - - | 4 | .....Washers (3/8 Lock) |
| 14 | CH502A | 2 | .....Riser Block Assembly (Pkg. of 1) |
| 15 | CH493A | 2 | .....Clamp Plates (For 6 cylinder Straight Engine Blocks) (Pkg. of 2) |
| 16 | CH499A | 2 | .....Cross Bar (Pkg. of 1) *with* |
| N/S | PHS528 | 4 | .....Screws (3/8-16 x 2-1/2 Hex Hd. Cap) |
| N/S | - - - | 8 | .....Washers (7/8 O.D. x 3/8 I.D. .065 Thick) |
| 17 | CH636A | 1 | .....Special Wrench |
| 18 | CH480A | 2 | .....Nest Pivot Assembly (Pkg. of 1) *with* |
| N/S | PHS-549 | 2 | .....Screws (1/2-13 x 1-1/2 Hex Hd. Cap) |
| N/S | KN370 | 2 | .....Washers (7/8 O.D. x 33/64 I.D..x .065 Thick) |
| 19 | CH475A | 2 | .....Cradle Neck (Pkg. of 1) |
| 20 | CH585A | 1 | .....Clamp Bar Set *with* |
| N/S | - - - | 1 | .....Outside Clamp Bar |

*N/S indicates Not Shown*

*NOTE: CH525 must be ordered separately (not included with CH-20 or CH-40 Kits).*

## SECTION IV – SWITCH BOX ASSEMBLY

CH850A




CH850K

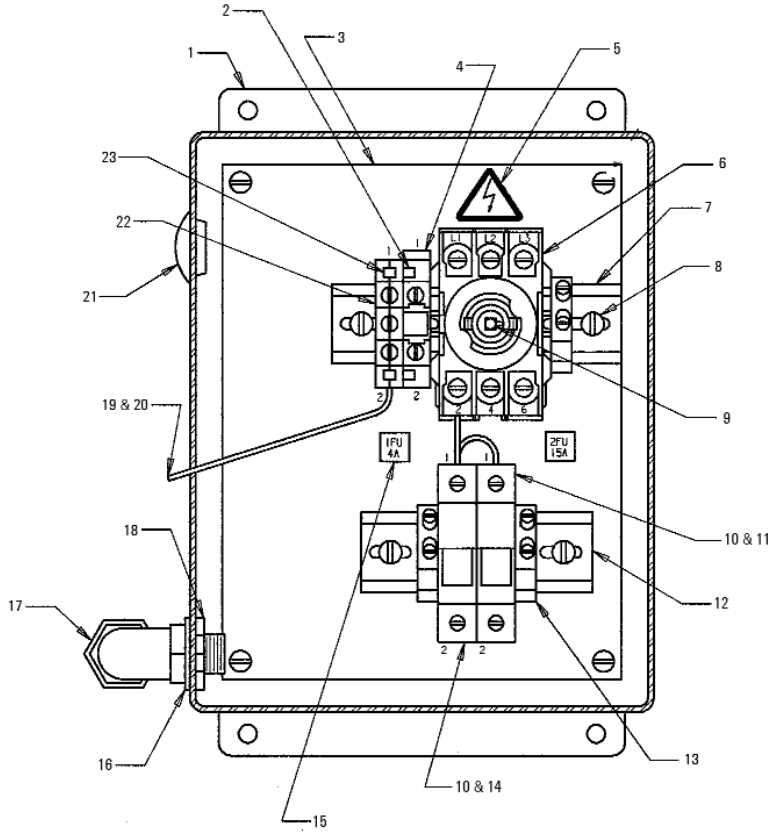



FIGURE 4-A – CH850A/K/KA SWITCH BOX ASSEMBLY

PARTS LIST COVERING FIGURE "4-A"

| ITEM NO. | **ORDER BY PART NUMBER** | QTY. | DESCRIPTION |
|---|---|---|---|
| | **CH850A** | Ref. | ....**Switch Box Assembly** *consists of* |
| 1 | PEM768 | 1 | .....Enclosure |
| 2 | PEM767 | 1 | .....Panel |
| 3 | PNP318 | 1 | .....Electrical Decal |
| 4 | PES297 | 1 | .....Non-Fused Disconnect Switch |
| 5 | DRB0125 | 1 | .....Din Rail (125mm) |
| 6 | PHSM438 | 4 | .....Screw (M5 X 0.8 X 12mm PPHTCS) |
| 7 | CH853 | 1 | .....Disconnect Rod (4.125) |
| 8 | PEM755 | 2 | .....Ultrasafe Class CC Fuseholder |
| 9 | PEF141 | 2 | .....Fuse (CCMR-10 Class CC) |
| 10 | DRB0100 | 1 | .....Din Rail (100mm) |
| 11 | PEM473 | 3 | .....End Stop |
| 12 | PEM154 | 1 | .....Wire & Cable Marking Label; 500 Labels Per Roll |
| 13 | PEM252 | 1 | .....Sealing 'O' Ring With Retainer |
| 14 | PEC103 | 1 | .....Conduit Connector With Locknut |
| 15 | PHN125 | 1 | .....Locknut (1/2" Npt) |
| 16 | MSA63 | 1 | .....Nut, Hex (#10-32) |
| 17 | LBA451 | 1 | .....Lockwasher, External Tooth (#10) |
| 18 | PEM823 | 1 | .....Knockout Plug |
| 19 | PET545 | 1 | .....Protective Earth Ground |
| 20 | PEM729 | 2 | .....Marking Tag |
| | **CH850K** | Ref. | ....**Switch Box Assembly** *consists of* |
| 1 | PEM768 | 1 | .....Enclosure |
| 2 | PEM728 | 2 | .....Marking Tag |
| 3 | PEM767 | 1 | .....Panel |
| 4 | PET551 | 1 | .....Terminal Block - Neutral |
| 5 | PNP318 | 1 | .....Electrical Decal |
| 6 | PES297 | 1 | .....Non-Fused Disconnect Switch |
| 7 | DRB0125 | 1 | .....Din Rail (125mm) |
| 8 | PHSM438 | 4 | .....Screw (M5 X 0.8 X 12mm PPHTCS) |
| 9 | CH853 | 1 | .....Disconnect Rod |
| 10 | PEM755 | 2 | .....Ultrasafe Class CC Fuseholder |
| 11 | PEF175 | 1 | .....Fuse |
| 12 | DRB0100 | 1 | .....Din Rail (100mm) |
| 13 | PEM473 | 3 | .....End Stop |
| 14 | PEF135 | 1 | .....Fuse |
| 15 | PEM154 | 1 | .....Wire & Cable Marking Label; 500 Labels Per Roll |
| 16 | PEM252 | 1 | .....Sealing 'O' Ring With Retainer |
| 17 | PEC103 | 1 | .....Conduit Connector With Locknut |
| 18 | PHN125 | 1 | .....Locknut (1/2" Npt) |
| 19 | MSA63 | 1 | .....Nut, Hex (#10-32) |
| 20 | LBA451 | 1 | .....Lockwasher, External Tooth (#10) |
| 21 | PEM823 | 1 | .....Knockout Plug |
| 22 | PET545 | 1 | .....Protective Earth Ground |
| 23 | PEM729 | 2 | .....Marking Tag |

*N/S indicates Not Shown*

*NOTE: CH850 must be ordered separately (not included with CH-20 or CH-40 Kits).*

# NOTES

## NOTES

## NOTES

**WARNING**

**An Arc Flash Hazard Exists. Follow safe work practices and wear appropriate Personal Protective Equipment. Follow proper lockout/tagout procedures. *Failure to comply can result in death or injury.***

Like any machinery, this equipment may be dangerous if used improperly. Be sure to read and follow instructions for operation of equipment.

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| | | | | |
|---|---|---|---|---|
| 4,428,160 | 5,022,196 | 5,234,295 | 5,443,417 | 6,780,084 |
| 4,796,363 | 5,178,643 | 5,243,792 | 5,663,886 | 7,371,149 |
| 4,809,440 | 5,185,969 | 5,255,476 | 5,707,278 | 7,575,502 |
| 4,866,855 | 5,209,615 | 5,390,448 | 6,074,282 | 7,727,051 |
| 4,993,189 | 5,222,625 | 5,433,656 | 6,527,620 | |

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| INCH FRACTION | INCH DECIMAL | MILLIMETER | INCH FRACTION | INCH DECIMAL | MILLIMETER | INCH FRACTION | INCH DECIMAL | MILLIMETER |
|---|---|---|---|---|---|---|---|---|
| . . . . | .003937 | 0,1000 | 9/32 | .281250 | 7,1438 | 21/32 | .656250 | 16,6688 |
| . . . . | .007874 | 0,2000 | 19/64 | .296875 | 7,5406 | . . . . | .669291 | 17,0000 |
| . . . . | .011811 | 0,3000 | 5/16 | .312500 | 7,9375 | 43/64 | .671875 | 17,0656 |
| 1/64 | .015625 | 0,3969 | . . . . | .314961 | 8,0000 | 11/16 | .687500 | 17,4625 |
| . . . . | .015748 | 0,4000 | 21/64 | .328125 | 8,3344 | 45/64 | .703125 | 17,8594 |
| . . . . | .019685 | 0,5000 | 11/32 | .343750 | 8,7313 | . . . . | .708661 | 18,0000 |
| . . . . | .023622 | 0,6000 | . . . . | .354331 | 9,0000 | 23/32 | .718750 | 18,2563 |
| . . . . | .027559 | 0,7000 | 23/64 | .359375 | 9,1281 | 47/64 | .734375 | 18,6531 |
| 1/32 | .031250 | 0,7938 | 3/8 | .375000 | 9,5250 | . . . . | .748031 | 19,0000 |
| . . . . | .031496 | 0,8000 | 25/64 | .390625 | 9,9219 | 3/4 | .750000 | 19,0500 |
| . . . . | .035433 | 0,9000 | . . . . | .393701 | 10,0000 | 49/64 | .765625 | 19,4469 |
| . . . . | .039370 | 1,0000 | 13/32 | .406250 | 10,3188 | 25/32 | .781250 | 19,8438 |
| 3/64 | .046875 | 1,1906 | 27/64 | .421875 | 10,7156 | . . . . | .787402 | 20,0000 |
| 1/16 | .062500 | 1,5875 | . . . . | .433071 | 11,0000 | 51/64 | .796875 | 20,2406 |
| 5/64 | .078125 | 1,9844 | 7/16 | .437500 | 11,1125 | 13/16 | .812500 | 20,6375 |
| . . . . | .078740 | 2,0000 | 29/64 | .453125 | 11,5094 | . . . . | .826772 | 21,0000 |
| 3/32 | .093750 | 2,3813 | 15/32 | .468750 | 11,9063 | 53/64 | .828125 | 21,0344 |
| 7/64 | .109375 | 2,7781 | . . . . | .472441 | 12,0000 | 27/32 | .843750 | 21,4313 |
| . . . . | .118110 | 3,0000 | 31/64 | .484375 | 12,3031 | 55/64 | .859375 | 21,8281 |
| 1/8 | .125000 | 3,1750 | 1/2 | .500000 | 12,7000 | . . . . | .866142 | 22,0000 |
| 9/64 | .140625 | 3,5719 | . . . . | .511811 | 13,0000 | 7/8 | .875000 | 22,2250 |
| 5/32 | .156250 | 3,9688 | 33/64 | .515625 | 13,0969 | 57/64 | .890625 | 22,6219 |
| . . . . | .157480 | 4,0000 | 17/32 | .531250 | 13,4938 | . . . . | .905512 | 23,0000 |
| 11/64 | .171875 | 4,3656 | 35/64 | .546875 | 13,8906 | 29/32 | .906250 | 23,0188 |
| 3/16 | .187500 | 4,7625 | . . . . | .551181 | 14,0000 | 59/64 | .921875 | 23,4156 |
| . . . . | .196850 | 5,0000 | 9/16 | .562500 | 14,2875 | 15/16 | .937500 | 23,8125 |
| 13/64 | .203125 | 5,1594 | 37/64 | .578125 | 14,6844 | . . . . | .944882 | 24,0000 |
| 7/32 | .218750 | 5,5563 | . . . . | .590551 | 15,0000 | 61/64 | .953125 | 24,2094 |
| 15/64 | .234375 | 5,9531 | 19/32 | .593750 | 15,0813 | 31/32 | .968750 | 24,6063 |
| . . . . | .236220 | 6,0000 | 39/64 | .609375 | 15,4781 | . . . . | .984252 | 25,0000 |
| 1/4 | .250000 | 6,3500 | 5/8 | .625000 | 15,8750 | 63/64 | .984375 | 25,0031 |
| 17/64 | .265625 | 6,7469 | . . . . | .629921 | 16,0000 | 1 | 1.000000 | 25,4000 |
| . . . . | .275591 | 7,0000 | 41/64 | .640625 | 16,2719 | 1-1/16 | 1.062500 | 26,9880 |

## FORMULAS:

| MULTIPLY | | BY | | TO GET |
|---|---|---|---|---|
| INCHES (in) | x | 25.4 | = | MILLIMETERS (mm) |
| FEET (ft) | x | 0.3048 | = | METERS (m) |

| MULTIPLY | | BY | | TO GET |
|---|---|---|---|---|
| MILLIMETERS (mm) | x | 0.03937 | = | INCHES (in) |
| METERS (m) | x | 3.281 | = | FEET (ft) |

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